



WiSpan Ethernet Bridge User Guide



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Contents

List of Tables	5
List of Figures	5
1: Using This Guide	6
Purpose and Audience	6
Chapter Summary	6
Additional Documentation	7
2: Introduction	8
Protocol Support	8
Configuration Methods	8
3: Hardware	10
Serial Connector Pinouts	10
Network Interface	10
Ethernet Connector Pinouts	11
LEDs	11
4: Quick Start	13
Installing the WiSpan for Configuration	13
Using the Setup Port	13
Using the Ethernet Port	14
Using Setup Mode for Server and WLAN Configuration	14
Server Settings	15
WLAN Settings	16
Next Steps	18
5: Using DeviceInstaller	19
Installing DeviceInstaller	19
Viewing the Current Configuration	19
6: Web-Manager Configuration	22
Accessing Web-Manager	22
Network Configuration	23
Automatic IP Address Configuration	23
Server Configuration	24
WLAN Configuration	25
Updating Settings	28
Applying Defaults	28
7: Advanced Settings and Defaults (Setup Mode)	29
Expert Settings	29
TCP Keepalive time in s	29
ARP Cache timeout in s	29
CPU performance	29
HTTP Port Number	30
MTU Size	30

Enable alternate MAC _____	30
Ethernet Connection Type _____	30
Configurable Server Port Number _____	30
Security Settings _____	30
Disable SNMP _____	30
SNMP Community Name _____	31
Disable Telnet Setup _____	31
Disable TFTP Firmware Upgrade _____	31
Disable Port 77FE (Hex) _____	31
Disable Web Server _____	31
Disable Web Setup _____	31
Disable ECHO Ports _____	32
Enable Enhanced Password _____	32
Default Settings _____	32
WLAN Settings _____	32
Expert Settings _____	32
Security Settings _____	33
Exit Configuration Mode _____	33
8: Monitor Mode _____	34
Entering Monitor Mode via the Setup Port _____	34
Entering Monitor Mode via the Network Port _____	34
Monitor Mode Commands _____	35
9: Updating Firmware _____	37
Obtaining Firmware _____	37
Reloading Firmware _____	37
Using TFTP: Graphical User Interface _____	37
Using TFTP: Command Line Interface _____	38
Network Upgrade _____	38
Recovering the Firmware Using the Setup port and DeviceInstaller _____	38
WLAN Country Setting _____	39
10: Troubleshooting _____	40
Diagnostic LED States _____	40
Problems and Error Message _____	40
Technical Support _____	42
A: Technical Specifications _____	43
Technical Specifications _____	43
B: Compliance _____	44
Compliance Information _____	44
Regulatory Information _____	45
USA Federal Communications Commission (FCC) Notice _____	45
Canada – Industry Canada Notice _____	45
Europe – R&TTE Directive 99/5/EC, Wireless Notice _____	46
Australia & New Zealand – Wireless Notice _____	46
C: Warranty _____	48

List of Tables

Table 3-1. WiSpan Connection LEDs	11
Table 3-2. WiSpan Diagnostic Mode	12
Table 4-1. Standard IP Network Netmasks Representing Host Bits	15
Table 8-1. Monitor Mode Commands	35
Table 8-2. Command Response Codes	36
Table 9-1. Firmware Files	37
Table 10-1. WiSpan Technical Specifications	43

List of Figures

Figure 3-1. Back of the WiSpan	10
Figure 3-2. DB9M DTE Serial Connector	10
Figure 3-3. Front of WiSpan	11
Figure 3-4. RJ45 Ethernet Connector	11
Figure 4-1. WiSpan Connected for Configuration via the Serial Port	13
Figure 4-2. Setup Mode	14
Figure 4-3. Change Setup Menu	14
Figure 6-1. Web-Manager Home Page	22
Figure 6-2. Network Settings	23
Figure 6-3. Server Settings	24
Figure 6-4. WLAN Settings	26
Figure 9-1. TFTP Window	38

1: Using This Guide

Purpose and Audience

This guide provides the information needed to configure, use, and update the WiSpan. It is for network administrators, system integrators, and those responsible for installing and maintaining the WiSpan.

Chapter Summary

The remaining chapters in this guide include:

Chapter	Description
2: Introduction	The main features of the WiSpan and the protocols it supports.
3: Hardware	The WiSpan's connectors and LEDs.
4: Quick Start	Physically installing and initially configuring the WiSpan.
5: Using DeviceInstaller	Locating the WiSpan and viewing its current configuration settings using this Lantronix utility.
6: Web-Manager Configuration	Using Web-Manager to configure server and WLAN properties.
7: Advanced Settings and Defaults (Setup Mode)	Configuring expert and security settings in Setup Mode and listing the unit's default settings.
8: Monitor Mode	Accessing and using the command line interface for monitoring the network and diagnosing problems.
9: Updating Firmware	Obtaining the latest firmware and update the WiSpan.
10: Troubleshooting	Common problems and error messages and how to contact Lantronix Technical Support.
A: Technical Specifications	
B: Compliance	
C: Warranty	

Additional Documentation

The following guides are available on the product CD and the Lantronix web site (www.lantronix.com)

WiSpan Quick Start

Provides instructions for getting your WiSpan up and running.

DeviceInstaller Online Help

Provides information on using DeviceInstaller to view current configuration settings.

2: Introduction

The WiSpan is an industrial 802.11 b/g wireless-to-Ethernet bridge allowing 10/100 Ethernet-enabled devices to seamlessly connect and communicate over 802.11 b/g wireless networks. By bridging 10/100 Ethernet to 802.11 b/g, wireless mobility can be added to Ethernet devices.

The WiSpan Ethernet bridge connects or bridges Ethernet devices to wireless networks using the IP protocol.

Note: *The Ethernet interface can only bridge a single wired device.*

Typical applications of the WiSpan include:

- ◆ Cash registers
- ◆ POS terminals
- ◆ Vending machines
- ◆ Industrial equipment
- ◆ Security panels

Protocol Support

The WiSpan Ethernet bridge uses the TCP/IP protocol stack for network communications. Other supported protocols include:

- ◆ ARP, UDP, TCP, ICMP, Telnet, TFTP, AutoIP, HTTP, and SNMP for network communications and management.
- ◆ TCP, UDP, and Telnet for connections to the setup port.
- ◆ TFTP for firmware and web page updates.
- ◆ IP for addressing, routing, and data block handling over the network.
- ◆ User Datagram Protocol (UDP) for typical datagram applications in which devices that support UDP interact with other devices without maintaining a point-to-point connection.

Configuration Methods

For the unit to operate correctly on a network, it must have:

- ◆ An IP address
- ◆ Appropriate settings for network communications to an access point (Infrastructure Mode) or for peer-to-peer connection (Ad Hoc Mode).

Methods for logging into the WiSpan to set configurable parameters include:

Serial & Telnet Ports: There are two approaches to accessing Setup Mode: make a Telnet connection to the network port (9999) or connect a terminal (or a PC running a terminal emulation program) to the unit's setup (serial) port.

DeviceInstaller: This utility provides a GUI interface for locating the WiSpan on the network, assigning an IP address, viewing the current configuration, and updating firmware.

Web-Manager: Once the unit has an IP address, you can configure the WiSpan and its settings using the WiSpan's web interface, Web-Manager.

3: Hardware

The WiSpan has one setup (serial) port and one Ethernet port for setup and for connecting an Ethernet device using a network crossover cable. It has an 802.11 b/g transceiver that connects to another wireless device or to an Access Point (AP).

Following is a description of the serial and Ethernet connectors.

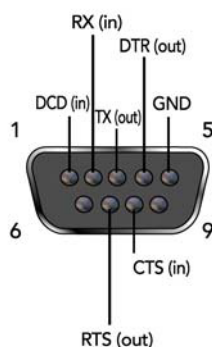
Serial Connector Pinouts

One DB9M DTE setup port provides default settings for RS-232C communications of 9600 baud, 8 bits, no parity, and 1 stop bit (9600, 8, N, 1). The only use of this port is to configure the unit in Setup Mode.

Figure 3-1. Back of the WiSpan



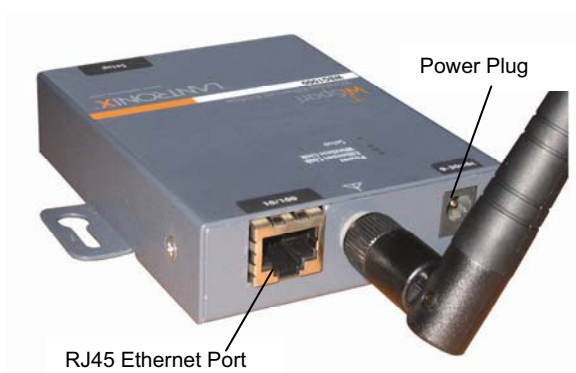
Figure 3-2. DB9M DTE Serial Connector



Network Interface

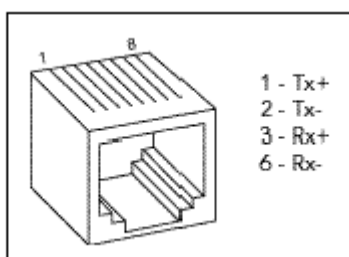
The back panel of the WiSpan contains a 9-30 VDC power plug and an RJ45 (10/100) Ethernet port. You may use the Ethernet port to configure the unit as well as to connect a network-enabled device to the network using a network crossover cable.

Figure 3-3. Front of WiSpan



Ethernet Connector Pinouts

Figure 3-4. RJ45 Ethernet Connector



LEDs

Table 3-1. WiSpan Connection LEDs

LEDs	Meaning
Power LED: green, steady ON	Power is on.
Wireless Link LED: blinking yellow Power Management: OFF	Unit is associating.
Wireless Link LED: OFF Power Management: OFF	Unit is associated.
Wireless Link LED: yellow ON Power Management, ON, OFF	Steady ON initially and during search
Wireless Link LED: blinking yellow Power Management: ON	Unit is associated, transmit/receive
Ethernet Link LED: green, steady on	Active network connection.

When you connect to the WiSpan by means of the serial port, the LEDs exhibit the following pattern, indicating that the unit is in diagnostic mode:

Table 3-2. WiSpan Diagnostic Mode

LEDs	Meaning
Power LED: Green, steady on	Power is on
Wireless Link LED: yellow off	No active wireless connection.
Setup (Serial)	Serial LED blinks 4 times, off for 2 seconds and then repeats.

Note: For information about the WiSpan's diagnostic LEDs, see [Diagnostic LED States](#) on page 40.

4: Quick Start

This chapter describes how to install and configure the WiSpan unit to get it up and running. You must configure the WLAN settings for the WiSpan to communicate on a wireless network.

Note: You only need to configure the WiSpan's IP address and other network settings if you want to discover and configure your WiSpan device from the wired network; these settings only apply to communication on the Ethernet interface.

Installing the WiSpan for Configuration

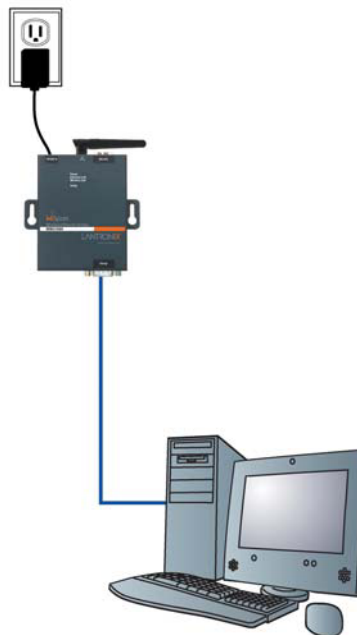
There are two methods for installing the WiSpan so that you can configure it:

Using the Setup Port

To connect to and initially configure the WiSpan using the setup port:

1. Connect one end of the supplied DB9F – DB9F null modem serial cable to the WiSpan's setup port.
2. Connect the other end of the DB9 serial cable to a terminal or a PC's serial COM port.
3. Continue with [Using Setup Mode for Server and WLAN Configuration](#), below.

Figure 4-1. WiSpan Connected for Configuration via the Serial Port



Using the Ethernet Port

To connect to and initially configure the WiSpan using the Ethernet port:

1. If a device is connected to the WiSpan's Ethernet port, disconnect it and connect a PC for configuring the WiSpan.
2. Set up the PC's Ethernet port for AutoIP or assign a static IP address in the AutoIP range (169.254.x.x).
3. Use a utility such as DeviceInstaller to locate the WiSpan's MAC address and IP address. This utility must use the Lantronix access protocol to query the WiSpan. (See [5: Using DeviceInstaller](#).)
4. Use the WiSpan's Web-Manager (see [6: Web-Manager Configuration](#)) or Telnet to port 9999 to configure the WiSpan.

Note: *Telneting to the WiSpan accesses Setup Mode. The procedure for using Setup Mode from the Ethernet port is the same as for using the setup port, described below, starting with step 3.)*

5. Disconnect the PC and reconnect the original device to the WiSpan's Ethernet port.

Using Setup Mode for Server and WLAN Configuration

To use Setup Mode for configuration:

1. With a connection to the setup port, open a terminal emulation application (e.g. HyperTerminal) on the PC. The default serial settings are 9600 baud, 8 bits, no parity, 1 stop bit, and no flow control (9600, 8, N, 1).
2. Enter Setup Mode by simultaneously connecting the power supply and holding down the **x** key. Upon connection, information similar to the following displays:

Figure 4-2. Setup Mode

```
*** Lantronix WiSpan Device Server ***
MAC address 00204A89468C
Software version V6.5.0.2T4 <070221>

Press Enter for Setup Mode
```

3. **Press Enter within 5 seconds** to display current settings followed by the Change Setup menu.

Note: *Current values display in parentheses.*

Figure 4-3. Change Setup Menu

```
Change Setup:
0 Server
4 WLAN
5 Expert
6 Security
7 Defaults
8 Exit without save
9 Save and exit          Your choice ? 0
```

Note: *For initial configuration, only WLAN settings are required. To configure these settings only, start with [WLAN Settings](#) on page 16.*

Server Settings

To configure the Server (WiSpan) settings, select **0 Server** from the Change Setup menu.

```
Network mode: Bridging<One Host>
IP Address : <172> .<018> .<023> .<005>
Set Gateway IP Address <N> ?
Netmask: Number of Bits for Host Part <0=default> <0>
Change telnet config password <N> ?
```

The unit's basic server (network) values display when you select **Server** (option **0** from the Change Setup menu). The following sections describe the configurable parameters within the Server configuration menu.

Network Mode: The network mode (**Bridging <One Host>**).

```
Network mode: Bridging<One Host>
```

Set the IP Address: The unit has an automatically assigned IP address. To assign a static address, enter it manually. The IP address must be set to a unique value in the network. Enter each octet and press **Enter** between sections. The current value displays in parentheses.

```
IP Address : ( 0 ) ( 0 ) ( 0 ) ( 0 ) _
```

Set the Gateway IP Address: The gateway address, or router, allows communication to other LAN segments. The gateway address should be the IP address of the router connected to the same LAN segment as the unit. The gateway address must be within the local network.

The default is **N** (No), indicating the gateway address has not been set. To set the gateway address, type **Y**. At the prompt, enter the gateway address.

```
Set Gateway IP Address <N> ?
Netmask: Number of Bits for Host Part <0=default> <0>
```

Set the Netmask: A netmask defines the number of bits taken from the IP address that are assigned for the host part.

```
Netmask: Number of Bits for Host Part (0=default) (0)
_
```

The unit prompts for the number of host bits to be entered, then calculates the netmask, which displays in standard decimal-dot notation when the saved parameters display (for example, 255.255.255.0).

Table 4-1. Standard IP Network Netmasks Representing Host Bits

Network Class	Host Bits	Netmask
A	24	255.0.0.0
B	16	255.255.0.0
C	8	255.255.255.0

Change Telnet Configuration Password: Change the Telnet configuration password to prevent unauthorized access to the Change Setup menu and Web-Manager.

WLAN Settings

To modify WLAN settings, select **4 WLAN** from the Change Setup menu and edit the following fields.

Topology: Select **Infrastructure** (ESS) mode or **AdHoc** (IBSS). Infrastructure mode communicates with Access Points. Ad Hoc mode communicates only with other clients.

```
Topology 0=Infrastructure, 1=AdHoc (1) ?
```

Network Name (SSID): Enter the name of the network to which the WiSpan will connect.

```
Network name (SSID) (LTRX_IBSS) ? _
```

Ad Hoc Network Creation Channel: When Ad Hoc mode is selected, and the WiSpan cannot find the specified network, it creates one with that network name by transmitting a beacon on the selected channel.

```
Channel (11) ?
```

You can only select channels allowed in the country for which the WiSpan is designated. The country displays in the list of current settings when you first access Setup Mode.

Security Suite: The WiSpan features WEP, WPA, and 802.11i-PSK/WPA2-Personal to secure all wireless communication. WPA and 802.11i-PSK/WPA2-Personal are not available when the topography is **Adhoc**. The 802.11i-PSK/WPA2-Personal mode is compliant with the Robust Secure Network specified by the IEEE standard 802.11i. It enables the AES-based strong CCMP encryption.

```
WEP: Authentication 0=open/none, 1=shared (0) ? _
Encryption 0=WEP64, 1=WPE128 (1) ?
Display current key (N) ?
Change key (N) ? Y
Key type 0=hex, 1=passphrase (0) ?
Enter key: **-*--*--*--*--*
TX Key index (1) ?
```

Authentication	Select whether the encryption keys must match those of the communication partner before passing through messages (1 = shared; 2 = open/none).
Encryption	Select the length of the encryption key and the security strength. WEP64 uses a 40 bits/5 bytes key (option 1). WEP128 uses a 104 bits/13 bytes key (option 2).
Display Current Key	Select Y (Yes) to show the currently configured key/passphrase
Change key	Select Y (Yes) to modify the currently configured key.
Key type	Indicate whether the new key is in hexadecimal or passphrase format.
Enter key	Enter the new encryption key. The passphrase input is not the same as ASCII input (as used on some products). ASCII is translated directly into hexadecimal bytes according to the ASCII table. The WiSpan passphrase is hashed using the Neesus Datacom algorithm (for WEP64) or MD5 (for WEP128).

	<p>The passphrase input is safer because it is up to 63 chars long. ASCII input is a maximum of 5 (WEP64) or 13 (WEP128) characters long and limits the number of key combinations.</p> <p>Please refer to the other equipment's manual to determine the passphrase input style recommended.</p> <p>Note: Lantronix recommends using a passphrase of 20 characters or more for maximum security.</p>
TX Key index	Select the WEP key used for transmissions from your access point. Enter a value from 1 to 4.

WPA: The WiSpan firmware allows only Pre-Shared Keys (PSK) for authentication.

```

Display current key (N) ?
Change key (N) ?
Key type 0=hex, 1=passphrase (1) ?
Enter key: () ?
It is strongly recommended to use a passphrase of 20
chars or more!
Encryption: 0=TKIP, 1=TKIP+WEP (1)

```

Display current key	Select Y (Yes) at the prompt to show the currently configured key/passphrase
Change key	Select Y (Yes) to modify the currently configured key.
Key type	Indicate whether the new key is in hexadecimal or passphrase format.
Enter key	Enter the passphrase. The maximum length is 63 characters. Note: Lantronix recommends using a passphrase of 20 characters or more for maximum security.
Encryption	Set the type to the minimum required security level. The "+" sign indicates that the group (broadcast) encryption method is different from the pairwise (unicast) encryption (WEP and TKIP).

802.11i-PSK/WPA2-Personal:

```

Display current key (N) ?
Change key (N) ? Y
Key type 0=hex, 1=passphrase (1) ?
Enter key: () ?
It is strongly recommended to use a passphrase of 20
chars or more!
Encryption: 0=CCMP, 1=CCMP+TKIP, 2=CCMP+WEP, 3=TKIP,
4=TKIP+WEP (4) ?

```

Display current key	Select Y (Yes) to show the currently configured key/passphrase.
Change key	Select Y (Yes) to modify the currently configured key.
Key type	Indicate whether the new key is in hexadecimal or passphrase format.
Enter key	Enter the passphrase. The maximum length is 63 characters.

	Note: Lantronix recommends using a passphrase of 20 characters or more for maximum security.
Encryption	Set the type to the minimum required security level. The "+" sign indicates that the group (broadcast) encryption method is different from the pairwise (unicast) encryption. For example, for CCMP+TKIP, CCMP is the pairwise encryption and TKIP is the group encryption.

Fixed or Automatic Data Rate

WiSpan enables you to control of the transmission rate. Select **0** to set a fixed data rate or select **1** to set an automatic data rate. The default is **1** (auto fallback).

TX Data rate: 0=fixed, 1=auto fallback <1> ?

Transmission Data Rate

If the **TX Data rate** (above) is **fixed**, the selected data rate is the WiSpan's fixed transmission rate. If the **TX Data rate** is **auto fallback**, the selected data rate is the WiSpan's maximum data rate. Lower data rates allow for larger distances. They may also be required when communicating with older devices. The default is **11** Mbps.

TX Data rate 0=1, 1=2, 2=5.5, 3=11
4=18, 5=24, 6=36, 7=54 Mbps (0) ? _

Enable Power Management

Select **Y** (Yes) to enable the software to turn off the radio when expecting not to receive or transmit soon. This feature reduces the power consumption by up to 170 mA. Enabling power management increases the response time, because the radio needs to start up again. The radio synchronizes and checks for incoming messages (every 100 ms).

Note: This option is not available when the topology is **AdHoc**.

Enable power management (N) ?

Next Steps

1. Upon completing the IP and WLAN settings, select menu option **9 Save and exit**.
2. To configure the WiSpan further using the setup port, continue to 7: [Advanced Settings and Defaults \(Setup Mode\)](#).

5: Using DeviceInstaller

You can use DeviceInstaller, a utility on the product CD, to locate a WiSpan and manually assign it a static IP address, view its current configuration settings, and upgrade its firmware. DeviceInstaller only works over a wired Ethernet connection to this product.

Installing DeviceInstaller

To install the DeviceInstaller:

1. Insert the product CD into your CD-ROM drive.
If the CD does **not** launch automatically:
 - a) Click the **Start** button on the Task Bar and select **Run**.
 - b) Enter your CD drive letter, colon, backslash, **deviceinstaller.exe** (e.g., **E:\deviceinstaller.exe**).
2. Click the **DeviceInstaller** button. The installation wizard window displays.
3. Respond to the installation wizard prompts. (When prompted to select an installation type, select **Typical**.)
4. Once you have installed DeviceInstaller, follow the instructions in DeviceInstaller's Online Help to assign the IP address and view the current configuration.
5. To configure the WiSpan further, go to [5: Advanced Settings and Defaults \(Setup Mode\)](#) or [6: Web-Manager Configuration](#).

Viewing the Current Configuration

After locating the WiSpan as described in DeviceInstaller's Online Help, you can view and change its current configuration.

To view the WiSpan's configuration settings:

1. In the right window, click the **Device Details** tab. The current WiSpan configuration displays:

Name	Configurable field. A name to identify the WiSpan. Double-click the field, type the value, and press Enter to complete. This name is not visible on other PCs or laptops using DeviceInstaller.
Group	Configurable field. A group to categorize the WiSpan. Double-click the field, type the value, and press Enter to complete. This group name is not visible on other PCs or laptops using DeviceInstaller.
Comments	Configurable field. To enter a comment about the WiSpan, double-click the field, type the comment, and press Enter . This description or comment is not visible on other PCs or laptops using DeviceInstaller.
Device Family	Non-configurable field. Displays the WiSpan's device family type as Wireless.
Type	Non-configurable field. Displays the device type as WiSpan.

ID	Non-configurable field. Displays the WiSpan's ID embedded within the box.
Hardware Address	Non-configurable field. Displays the WiSpan's hardware (or MAC) address.
Firmware Version	Non-configurable field. Displays the firmware version currently installed on the WiSpan.
Extended Firmware Version	Non-configurable field. Displays the full version nomenclature of the firmware installed on the WiSpan.
Online Status	Non-configurable field. Displays the WiSpan's status as online, offline, unreachable (the WiSpan is on a different subnet), or busy (the WiSpan is currently performing a task).
Telnet Enabled	Non-configurable field. Displays True indicating that you can access the WiSpan using Telnet.
Telnet Port	Non-configurable field. Displays the WiSpan's port for Telnet sessions.
Web Enabled	Non-configurable field. Displays True , indicating you can access WiSpan using Web-Manager.
WebPort	Non-configurable field. Displays the WiSpan's port for Web-Manager configuration.
Maximum Baud Rate Supported	Non-configurable field. Displays the WiSpan's maximum baud rate.
Firmware Upgradeable	Non-configurable field. Displays True , indicating the WiSpan's firmware is upgradeable as newer versions become available.
IP Address	Non-configurable field. Displays the WiSpan's current IP address. To change the IP address and related settings, click the Assign IP Address button and follow the instructions in DeviceInstaller's online Help.
Number of COB partitions supported	Non-configurable field. Displays the number of COB partitions supported (19).
Supports DynamicIP	Non-configurable field. Indicates whether the current IP address was set automatically.
Subnet Mask	Non-configurable field. Displays the WiSpan's current subnet mask.
Gateway	Non-configurable field. Displays the WiSpan's current gateway.
Number of Ports	Non-configurable field. The number of serial ports.
TCP Keepalive value	Displays 1-65s , the WiSpan's TCP keepalive value.
Supports Configurable Pins	Non-configurable field. False , indicating configurable pins are not available on the WiSpan.
Supports Email Triggers	Non-configurable field. False , indicating email triggers are not available on the WiSpan.

Supports AES Data Stream	Non-configurable field. Displays False , indicating the WiSpan does not support AES encryption.
Supports 485	Non-configurable field. Displays False , indicating the WiSpan does not support the RS-485 protocol.
Supports 920K Baudrate	Non-configurable field. Displays False , indicating the WiSpan does not support baud rates up to 920K.
Supports Wired Ethernet	Non-configurable field. Displays True , indicating the WiSpan supports wired Ethernet.
Supports HTTP Server	Non-configurable field. Displays True , indicating the WiSpan supports HTTP server.
Supports HTTP Setup	Non-configurable field. Displays True , indicating the WiSpan supports HTTP setup.
Supports 230K Baudrate	Non-configurable field. Displays False , indicating the WiSpan does not support a baud rate of 230K.
Supports GPIO Communication	Non-configurable field. Displays False , indicating the WiSpan does not support communication via General Purpose Input Output (GPIO).

6: Web-Manager Configuration

This chapter describes how to configure the WiSpan using Web-Manager, Lantronix's browser-based configuration tool. The unit's configuration is stored in nonvolatile memory and is retained without power. The unit performs a reset after the configuration is changed and stored.

Note: For instructions on setting up the WiSpan for initial configuration using the Ethernet port, see [Using the Ethernet Port](#) on page 14.

Accessing Web-Manager

To access Web-Manager through a Web Browser:

1. Open a standard web browser (Netscape Navigator 6.x and later or Internet Explorer 5.5. and later).
2. In the address bar, enter the WiSpan IP address in the following format:
<http://xxx.xxx.xxx.xxx> (where xxx.xxx.xxx.xxx is the IP address assigned to the WiSpan unit)
3. Press **Enter**. The Web-Manager for WiSpan opens in a browser window.

A user and password dialog box displays. By default, no user and password are configured, so just click **OK**.

Note: As an alternative, you can access Web-Manager by clicking DeviceInstaller's **Web Configuration** tab.

Figure 6-1. Web-Manager Home Page



The main menu is on the left panel of the Web-Manager window.

Network Configuration

Select **Network** from the main menu to display the unit's network values. The following sections describe the configurable network parameters.

Note: The automatically assigned IP address and related settings do not display.

Figure 6-2. Network Settings

The screenshot displays the LANTRONIX web interface for Network Settings. The sidebar on the left includes a home icon and menu items: Network, Server, WLAN, Apply Settings, and Apply Defaults. The main panel, titled 'Network Settings', is divided into two sections. The 'IP Configuration' section shows 'AutoIP' with radio buttons for 'Enable' and 'Disable' (selected). Below are input fields for 'IP Address' (172.18.23.5), 'Subnet Mask' (0.0.0.0), and 'Default Gateway' (0.0.0.0). The 'Ethernet Configuration' section has a checked 'Auto Negotiate' checkbox, with 'Speed' set to 100 Mbps (selected) and 10 Mbps, and 'Duplex' set to Full (selected) and Half. An 'OK' button is positioned at the bottom right of the configuration area.

Automatic IP Address Configuration

To assign an IP address and its network configuration automatically:

1. Click **Network** from the main menu.
2. Enter the following:

IP Configuration

AutoIP	<p>The WiSpan generates an IP in the 169.254.x.x address range with a Class B subnet.</p> <p>To enable this feature: Select the Enable checkbox and continue with Ethernet Configuration.</p> <p>To disable this feature: select the Disable checkbox (default) and continue entering information. Then continue with Ethernet Configuration.</p>
IP Address	<p>If you did not enable AutoIP, enter the static IP address in standard decimal-dot notation. The IP address must be set to a unique value in the network.</p>
Subnet Mask	<p>A subnet mask defines the number of bits taken from the IP address that are assigned for the host part.</p>

Default Gateway	The gateway address, or router, allows communication to other LAN segments. The gateway address should be the IP address of the router connected to the same LAN segment as the unit. The gateway address must be within the local network.
------------------------	---

Ethernet Configuration

Auto Negotiate	<p>With this option, the Ethernet port auto-negotiates the speed and duplex with the hardware endpoint to which it is connected. This is the default setting.</p> <p>If this option is not selected, complete the fields that become available:</p> <p>Speed: The speed of data transmission. The default setting is 100 Mbps.</p> <p>Duplex: The direction of data transmission. The default setting is Full.</p>
-----------------------	--

- Click **OK**.
- On the main menu, click **Apply Settings**.

Server Configuration

Selecting **Server** from the main menu displays the unit's server values. The following sections describe the configurable parameters within the Server configuration menu.

Figure 6-3. Server Settings

Firmware Version: **V6.5.0.2T4**
MAC Address: **00-20-4A-89-46-8C**

Server Settings

Server Configuration

Telnet Password:

Rtype Password:

Advanced

ARP Cache Timeout (secs):

TCP Keepalive (secs):

Monitor Mode @ Bootup: ☒ Enable ☐ Disable

CPU Performance Mode: ☐ Low ☒ Regular ☐ High

HTTP Server Port:

Config Server Port:

MTU Size:

To configure the WiSpan's server settings:

- Click **Server** from the main menu.

2. Configure or modify the following fields:

Server Configuration

Telnet Password	Enter the password required for Telnet access.
Retype Password	Re-enter the password required for Telnet access.

Advanced

ARP Cache Timeout	When the unit communicates with another device on the network, it adds an entry into its ARP table. ARP Cache timeout defines the number of seconds (1-600) before it refreshes this table.
TCP Keepalive	TCP Keepalive time defines how many seconds the unit waits during an inactive connection before checking its status. If the unit does not receive a response, it drops that connection. Enter a value between 1 and 65 seconds. 0 disables keepalive. The default setting is 45 .
Monitor Mode @ Bootup	Select Disable to disable the entry into Monitor Mode by means of the yyy or xx1 key sequence at startup. This command prevents the unit from entering Monitor Mode by interpreting the stream of characters received during the unit's initialization at startup.
CPU Performance Mode	Select the WiSpan's performance mode. Higher performance settings require more energy. Low is 26 Mhz. Regular is 48 Mhz; High is 88 Mhz. The default is Regular .
HTTP Server Port	This option allows the configuration of the web server port number. The valid range is 1-65535. The default HTTP server port number is 80 .
Config Server Port	The Ethernet wired host attached to the WiSpan may communicate with other Lantronix CoBos devices on the wireless network using the Lantronix Configuration Access Protocol (LCAP). This service is available on server port number 0x77FE (30718). The LCAP port number is configurable so that the LCAP service is available on the wired interface for WiSpan configuration.
MTU Size	The Maximum Transmission Unit (MTU) is the largest physical packet size a network can transmit for TCP and UDP. Enter between 512 and 1400 bytes. The default setting is 1400 bytes.

3. When you are finished, click the **OK** button.
4. On the main menu, click **Apply Settings**.

WLAN Configuration

Without adequate protection, a wireless LAN is susceptible to access by unauthorized users.

The WiSpan WLAN Settings menu permits the following actions:

- ◆ Configuration of the wireless network profile available for activation
- ◆ Configuration of the wireless network security settings

- ◆ Configuration of advanced settings such as radio power management

Note: For information about country-specific settings, see [WLAN Country Setting](#) on page 39.

To configure the WiSpan's WLAN settings:

1. Select **WLAN** from the main menu to open the WLAN Settings window.

Figure 6-4. WLAN Settings

Wireless Network Configuration

Network Name	Enter the name of the wireless network (SSID). The WiSpan connects to this wireless network.
Network Type	Select Infrastructure or Ad Hoc . The default is AdHoc .
Channel	Configurable only when Network Type is Ad Hoc . Select the radio channel for the Ad Hoc network from the drop-down menu. The default value is 11 .

Wireless Network Security

Security	The WiSpan features WEP, WPA, and 802.11i-PSK/WPA2-Personal to secure all wireless communication. If the topology
-----------------	---

	is Ad Hoc, only WEP is available. By default, wireless security is disabled on the WiSpan.
--	--

WEP Options

Authentication	Select an authentication scheme (Open/None or Shared) from the drop-down menu.
Encryption	Select the encryption type (64 bits or 128 bits for WEP) from the pull down menu. 64 bits is the default encryption for WEP.
Key Type	Select the key type (Hex or Passphrase).
Key & Retype Key	Enter the Encryption Key in hexadecimal value if the key type is Hex . Enter the key as a string if the key type is Passphrase . Passphrase input is not the same as ASCII input. <i>Note: Lantronix recommends using a passphrase of 20 characters or more for maximum security.</i>
TX Key	Select the key to use for transmission.

WPA Options

Authentication	Select Pre-Shared Keys from the drop-down menu.
Encryption	Select the encryption type from the drop-down menu. TKIP is the default encryption for WPA.
Key Type	Select the key type (Hex or Passphrase).
Key & Retype Key	Enter the Encryption Key in hexadecimal value if the key type is Hex . Enter the key as a string if the key type is Passphrase . Passphrase input is not the same as ASCII input. <i>Note: Lantronix recommends using a passphrase of 20 characters or more for maximum security.</i>

802.11i/WPA2-Personal Options

Authentication	Select Pre-Shared Keys from the drop-down list.
Encryption	Select the encryption type from the drop-down list. CCMP is the default encryption for WPA.
Key Type	Select the key type (Hex or Passphrase).
Key and Retype Key	Enter the Encryption Key in hexadecimal value if the key type is Hex . Enter the key as a string if the key type is Passphrase . Passphrase input is not the same as ASCII input. A passphrase of more than 20 characters is recommended. Spaces and punctuation characters are permitted.

Advanced Settings

TX Data Rate	WiSpan permits the control of the transmission data rate. Click the Auto check box to allow the WiSpan to automatically set the data rate (or leave it unchecked to set the transmission rate manually). The default rate is 11 Mbps .
---------------------	--

	<p>If you select Auto, choose the maximum data rate from the drop-down menu.</p> <p>If you do not select the Auto check box, select the fixed data rate (in Mbps) from the drop-down menu.</p> <p>Note: You cannot select the maximum data rate when the WiSpan automatically sets the data rate. The WiSpan supports the following additional rates: 18 Mbps, 24 Mbps, 36 Mbps, and 54 Mbps.</p>
Radio Power Management	<p>Power management reduces the overall power consumption of the WiSpan unit. Selecting Enable increases the response time.</p>

- When you are finished, click the **OK** button.
- On the main menu, click **Apply Settings**.

Updating Settings

- If you have not already done so, click the **Apply Settings** button from the main menu to save and apply the configuration changes.

Applying Defaults

- Click the **Apply Defaults** button to reset the unit's settings to the factory defaults, except for the WLAN settings. For a complete list of the default settings, see [Default Settings](#) on page 32.

7: Advanced Settings and Defaults (Setup Mode)

After performing the initial configuration, you may enter expert and security settings.

Expert Settings

To configure the Expert settings, select **5 Expert** from the Change Setup menu.

Caution: Only an expert should change these parameters. You must definitely know the consequences the changes may have.

Note: Current values display in parentheses.

TCP Keepalive time in s

Defines how many seconds the unit waits during a silent connection before checking whether the currently connected network device is still on the network. If the unit does not receive a response, it drops that connection.

```
TCP Keepalive time in s (1s - 65s; 0s=disable): (45)?  
—
```

ARP Cache timeout in s

When the unit communicates with another device on the network, it adds an entry into its ARP table. ARP Cache timeout defines the number of seconds (1-600) the unit waits before timing out this table.

```
ARP Cache timeout in s (1s - 65s; 0s=disable): (600)?  
—
```

CPU performance

Select the WiSpan's performance mode. Higher performance settings require more energy. **Low** is 26 Mhz, **Regular** is 48 Mhz, and **High** is 88 Mhz. The default setting is **Regular**.

```
CPU performance (0=Regular, 1=Low, 2=High): (0) ? _)?
```

Disable Monitor Mode @ bootup

Disables entry into Monitor Mode by means of the **yyy** or **xx1** key sequence at startup. This command prevents the unit from entering Monitor Mode by interpreting the stream of characters received during the WiSpan's initialization at startup. The default is **N** (No).

```
Disable Monitor Mode @ bootup (N) ? _
```

HTTP Port Number

This option enables configuration of the web server port number. The valid range is 1-65535. The default HTTP server port number is **80**.

HTTP Port Number : (80) ? _

MTU Size

The Maximum Transmission Unit (MTU) is the largest physical packet size a network can transmit for TCP and UDP. Enter between 512 and 1400 bytes. The default is **1400** bytes.

MTU Size: (1400) ? _

Enable alternate MAC

If necessary, enable the alternate MAC address (if specified in the OEM setup record).

Enable alternate MAC (N) ? _

Ethernet Connection Type

The WiSpan allows you to configure the Ethernet speed and duplex manually. Enter **0** for auto-negotiation (default). To select the speed and duplex, enter one of the following: **2** (10 Mbit/half duplex), **3** (10 Mbit/full duplex), **4** (100 Mbit/half duplex), or **5** (100 Mbit/full duplex).

Ethernet connection type: (0) ? _

Configurable Server Port Number

The device attached to the WiSpan may communicate with other CoBos devices on the wireless network using the Lantronix Configuration Access Protocol (LCAP). This service is available on server port number 0x77FE (30718) and is configurable so that the LCAP service is available on the wired interface for WiSpan configuration.

Config Server Port Number: (30718) ? _

Security Settings

Note: Current values display in parentheses.

You can only use a Telnet or serial connection to change Security settings.

Note: Lantronix recommends setting security over the dedicated network or over the serial setup. Parameters set over the network (Telnet 9999), may allow someone else to capture these settings.

Caution: Disabling both Telnet setup and Port 77FE prevents users from accessing the setup menu from the network.

Disable SNMP

If required for security purposes, disable SNMP on the WiSpan unit.

Disable SNMP (N) ? _

SNMP Community Name

The SNMP Community name is a required field for NMS to read or write to a device. Enter a string of 1 to 13 characters. The default entry is **public**.

SNMP Community Name (public): _

Disable Telnet Setup

Caution: Disabling both Telnet setup and Port 77FE prevents users from accessing the setup menu from the network.

This setting defaults to the **N** (No) option. The **Y** (Yes) option disables access to Setup Mode by Telnet (port 9999). It only allows access locally by means of the web pages and the setup port of the unit.

Disable Telnet Setup (N) ? _

Disable TFTP Firmware Upgrade

This setting defaults to the **N** (No) option. The **Y** (Yes) option disables TFTP for network firmware upgrades.

Disable TFTP Firmware Update (N) : _

Disable Port 77FE (Hex)

Caution: Disabling both Telnet setup and Port 77FE-and **Web Setup** prevents users from accessing the setup from the network.

Web-Manager and custom programs use Port 77FE to configure the unit remotely. If required, disable this capability for security purposes.

Select the **N** (No) option (default) to enable remote configuration by web pages, Telnet, or serial configuration.

Select the **Y** (Yes) option to disable remote configuration and web sites.

Note: The **Y** (Yes) option disables many of the GUI tools for configuring the unit, including the embedded Web-Manager tool.

Disable Port 77FEh (N) ? _

Disable Web Server

The **Y** (Yes) option disables the web server. This setting defaults to the **N** (No) option. Disabling the web server also disables the web setup.

Disable Web Server (N) ? _

Disable Web Setup

The **Y** (Yes) option disables configuration by means of the Web-Manager (but the web server remains active for custom web pages). This setting defaults to the **N** (No) option.

Disable Web Setup (N) ? _

Disable ECHO Ports

This setting controls whether the setup port echoes characters it receives.

Disable ECHO ports (Y) ? _

Enable Enhanced Password

This setting defaults to the **N** (No) option, which permits a 4-character password to protect Setup Mode by means of Telnet and web pages.

Select **Y** (Yes) to allow an extended security password of 16-characters for protecting Telnet access.

Enable Enhanced Password (Y) ? _

Default Settings

Select **7 Default Settings** from the Change Setup menu to reset the unit's Security and Expert settings to the factory default settings.

The server configuration settings for IP address and WLAN remain unchanged. Following are all default settings.

WLAN Settings

Enable WLAN	Y (Yes)
Topology	2 (AdHoc)
Network Name	LTRX_IBSS
Channel	11
Security	0 (none)
TX Data Rate	1 (auto)
TX Data Rate	11 Mbps
Enable Power Management	N (No)

Expert Settings

TCP Keepalive	45 (seconds)
ARP Cache Timeout	600 (seconds)
CPU Performance	Regular
Disable Monitor Mode	N (No)
HTTP Port Number	80
MTU Size	1400
Enable Alternate MAC	N (No) (for OEM use only)
Ethernet Connection Type	0 (auto negotiate)

Config Server Port Number	30718
Security Settings	
Disable SNMP	N (No)
SNMP Community Name	public
Disable Telnet Setup	N (No)
Disable TFTP Firmware Update	N (No)
Disable Port 77FEh	N (No)
Disable Web Server	N (No)
Disable Web Setup	N (No)
Disable ECHO ports	Y (Yes)
Enable Enhanced Password	N (No)

Exit Configuration Mode

To exit Setup Mode, do one of the following:

- ◆ To save all changes and reboot the device, select option **9 Save and exit** from the Change Setup menu.
- or
- ◆ To exit the configuration mode without saving any changes or rebooting, select option **8 Exit without save** from the Change Setup menu.

8: Monitor Mode

Monitor Mode is a command-line interface used for diagnostic purposes. There are two ways to enter Monitor Mode: locally by means of the setup port or remotely by means of the wired network.

Entering Monitor Mode via the Setup Port

To enter Monitor Mode locally:

1. Follow the same steps used for setting the serial configuration parameters. (See [4: Quick Start](#).)
2. Instead of typing three **x** keys, however:
 - a) Type **zzz** to enter Monitor Mode with network connections.
 - b) Type **yyy** to enter Monitor Mode without network connections.

A **0>** prompt indicates that you have successfully entered Monitor Mode.

Entering Monitor Mode via the Network Port

To enter Monitor Mode using a Telnet connection:

1. Establish a Telnet session to the configuration port (9999). The following message displays:

```
** Lantronix WiSpan Device Server ***  
MAC address 00204A89468C  
Software version V6.5.0.2T4 <070221>  
  
Press Enter for Setup Mode
```

2. Type **M** (upper case).

A **0>** prompt indicates that you have successfully entered Monitor Mode.

Monitor Mode Commands

The following commands are available in Monitor Mode.

Note: All commands must be in capital letters.

Table 8-1. Monitor Mode Commands

Command	Command Name	Function
VS	Version	Queries software header record (16 bytes) of unit.
GC	Get Configuration	Gets configuration of unit as hex records (120 bytes).
SC	Send Configuration	Sets configuration of unit from hex records.
PI x.x.x.x	Ping	Pings unit with IP address x.x.x.x to check device status.
AT	ARP Table	Shows the unit's ARP table entries.
TT	TCP Connection Table	Shows all incoming and outgoing TCP connections.
NC	Network Connection	Shows the unit's current IP address.
RS	Reset	Resets the unit.
QU	Quit	Exits diagnostics mode.
G0, G1, ..., Ge, Gf	Get configuration from memory page	Gets a memory page of configuration information from the device.
S0, S1, ..., Se, Sf	Set configuration to memory page	Sets a memory page of configuration information on the device.
GM	Get MAC address	Shows the unit's 6-byte MAC.
SS	Set Security record	Sets the Security record without the encryption key and length parameters. The entire record must still be written, but the encryption-specific bytes do not need to be provided (they can be null since they are not overwritten).
SA	Scan	<p>Initiates a wireless scan. Reports any stations found, including BSSID, SSID, and RSSI.</p> <p>If SA is followed by a string, that string is used to filter SSIDs before reporting.</p> <p>Note: If the BSS does not broadcast its SSID, only the BSSID and RSSI are returned.</p>
NS	Network Status	Reports the status of the network interfaces, including negotiated parameters like speed/duplex for Ethernet or BSSID, encryption, and authentication for wireless interfaces.

Responses to some of the commands are in Intel Hex format.

Note: Entering any of the commands listed above generates one of the following command response codes:

Table 8-2. Command Response Codes

Response	Meaning
0>	OK; no error
1>	No answer from remote device
2>	Cannot reach remote device or no answer
8>	Wrong parameter(s)
9>	Invalid command

9: Updating Firmware

This chapter explains how to obtain and update the unit's firmware.

Obtaining Firmware

Obtain the most up-to-date firmware and release notes for the unit from the Lantronix web site (www.lantronix.com) or by using anonymous FTP ([ftp.lantronix.com/pub](ftp://ftp.lantronix.com/pub)).

Reloading Firmware

There are several ways to update the unit's internal operational code (*ROM) using TFTP or by the setup port. You can also update the unit's internal web interface (*COB) using TFTP.

Here are typical names for those files. Check the Lantronix web site for the latest versions and release notes.

Table 9-1. Firmware Files

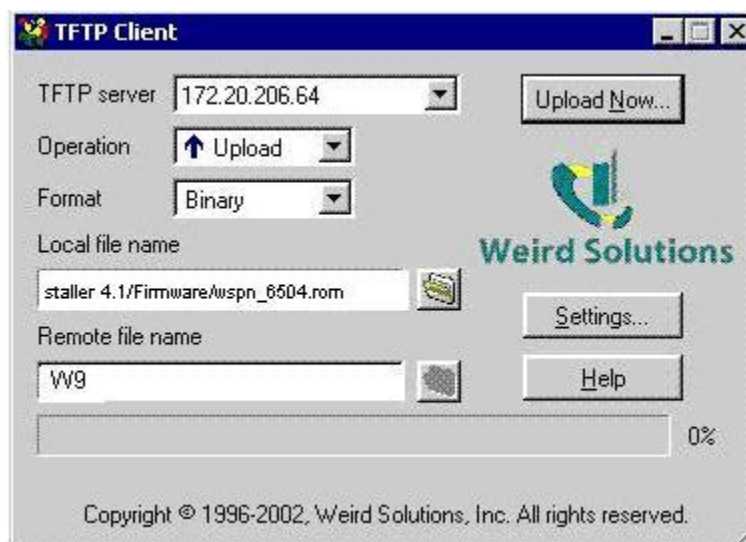
ROM File	COB
wspn_6504.rom	wspn_webm_1603.cob (Web-Manager)

Using TFTP: Graphical User Interface

To download new firmware from a computer:

1. Use a TFTP client to send a binary file to the unit (*.ROM to upgrade the unit's internal operational code and *.COB to upgrade its internal Web interface).
Note: TFTP requires the .ROM (binary) version of the unit's internal operational code.
2. In the **TFTP server** field, enter the IP address of the unit you are upgrading.
3. Select **Upload** operation and **Binary** format.
4. Enter the full path of the firmware file in the **Local file name** field.
5. In the **Remote file name** field, enter the current internal operational code or **WEB1** for the internal Web interface.
6. Click the **Upload Now** button to transfer the file to the unit.

Figure 9-1. TFTP Window



After the firmware has been loaded and stored, which takes approximately 8 seconds, the unit performs a power reset.

Using TFTP: Command Line Interface

To download new firmware from a computer:

1. Enter the following from a TFTP command line interface:

```
tftp -i <ip address> put <local filename> <destination
file name>
```

The following examples demonstrate the TFTP command sequence to download the .rom file and the .cob file:

```
tftp -i 192.168.1.111 put wspn_6502.rom W9
tftp -i 192.168.1.111 put wspn_webm_1602.cob WEB1
```

2. In the **Remote file name** field, enter the current internal operational code or **WEB1** for the internal Web interface.

Network Upgrade

Use the command: `tftp -i <ip address> put <wbx .rom filename> W9` or the DeviceInstaller upgrade feature. DI 4.1.0.11 and later support the WiSpan **W9** destination file.

Recovering the Firmware Using the Setup port and DeviceInstaller

If for some reason the firmware is damaged, you can recover the firmware file by using DeviceInstaller to download the *.ROM file over the setup port.

To recover firmware:

1. Connect the COM interface of your PC to the setup port of the WiSpan.

2. Start DeviceInstaller. If your PC has more than one network adapter, a message displays. Select an adapter and click the **OK** button.
3. From the **Tools** menu, select **Advanced/Recover Firmware**. The Serial Port Firmware Upgrade window displays.
4. For **Port on PC**, enter the COM port on the PC that is connected to the setup port of the Lantronix unit.
5. For **Device Model**, be sure the appropriate WiSpan device displays.
6. For **Firmware File**, click the **Browse** button and go to the location where the .rom firmware file resides.

Note: Make sure the WiSpan on which you are recovering firmware is connected to this selected port on your PC.

7. Click the **OK** button to download the file.
8. When prompted, reset the device. Status messages and a progress bar at the bottom of the screen show the progress of the file transfer. When the file transfer completes, the message "Successful, Click OK to Close" appears.
9. Click the **OK** button to complete this procedure.

Note For more information, see *Recovering Firmware in the DeviceInstaller online Help*.

WLAN Country Setting

Due to regulations, the country-specific setting is not on the setup menu and Web-Manager. However, we provide a separate utility for changing the **Country/Zone** setting. The utility is called SetZone and is included in the package. It is also available for download from the Lantronix web site.

The syntax is: **SetZone <IP address> [<zone abbreviation>]**

Leaving the zone blank causes the utility to report the current setting only. Following are valid zone abbreviations. These settings are consistent with IEEE802.11b/g zones:

US=United States

CA=Canada

FR=France

SP=Spain

JP=Japan

OT=Others, such as Europe (excluding France), Asia, Africa, and Australia

10: Troubleshooting

This chapter discusses how you can diagnose and fix errors quickly without having to contact a dealer or Lantronix. It helps to connect a terminal to the setup port while diagnosing an error to view summary messages that may display. When troubleshooting, always ensure that the physical connections (power cable, network cable, and serial cable) are secure.

Diagnostic LED States

Condition	Status LED
Network controller error	Blink 3x/4 seconds
Serial number storage checksum error	Blink 4x/4 seconds
Duplicate IP address present	Blink 5x/4 seconds
Setup menu active	Serial LED blinks 4 times, off for 2 seconds and then repeats.

Problems and Error Message

Problem/Message	Reason	Solution
Cannot establish an Infrastructure network connection to the WiSpan.	Network Name (SSID) in the WiSpan is not set or does not match the Access Point (AP).	Verify Network Name (SSID) for the WiSpan and AP are the same. These are case-sensitive.
	The AP has WEP encryption enabled and the WiSpan does not or WEP authentication type does not match the AP.	Enable WEP encryption in WiSpan. Set encryption key and authentication type to match the AP. Ensure the key is in HEX notation in both the AP and the WiSpan.
When you Telnet to port 9999, the <i>Press Enter to go into Setup Mode</i> message displays. However, nothing happens when you press Enter , or your connection is closed.	To enter Setup Mode by means of Telnet, press the Enter key within 5 seconds.	Telnet to port 9999 again and press Enter as soon as you see the <i>Press Enter to go into Setup Mode</i> message.

Problem/Message	Reason	Solution
When you try to enter the Setup Mode on the WiSpan by means of the setup port, you get no response.	The issue is most likely something covered in the previous problem, or possibly, you have Caps Lock on.	Double-check everything in the problem above. Confirm that Caps Lock is not on.
You can ping the WiSpan, but not Telnet to it on port 9999.	<p>There may be an IP address conflict on your network</p> <p>The Telnet configuration port (9999) is disabled within the WiSpan security settings.</p>	<p>Turn the WiSpan off and then issue the following commands at the DOS prompt of your computer:</p> <p>ARP -D X.X.X.X (X.X.X.X is the IP of the WiSpan).</p> <p>PING X.X.X.X (X.X.X.X is the IP of the WiSpan).</p> <p>If you get a response, then there is a duplicate IP address on the network. If you do not get a response, use the setup port to verify that Telnet is not disabled.</p>

Technical Support

If you are experiencing an error that is not described in this chapter, or if you are unable to fix the error, you may:

- ◆ To check our online knowledge base or send a question to Technical Support, go to <http://www.lantronix.com/support>.
- ◆ Email us at support@lantronix.com.

Technical Support Europe, Middle East, and Africa

Phone: +33 (0)1 39 30 41 72

Germany: +49 (0) 180 500 13 53

Email: eu_techsupp@lantronix.com or eu_support@lantronix.com

Firmware downloads, FAQs, and the most up-to-date documentation are available at:

www.lantronix.com/support

When you report a problem, please provide the following information:

- ◆ Your name, and your company name, address, and phone number
- ◆ Lantronix model number
- ◆ Lantronix MAC number
- ◆ Software version (on the first screen shown when you Telnet to port 9999)
- ◆ Description of the problem
- ◆ Status of the unit when the problem occurred (please try to include information on user and network activity at the time of the problem).

A: Technical Specifications

Technical Specifications

Table 10-1. WiSpan Technical Specifications

CPU, Memory	Lantronix DSTni-EX 186 CPU 256 KB zero wait state SRAM 2048 KB Flash
Serial Interface	RS-232 9600 baud, 8 bits, no parity, 1 stop bit
Network Interface	Wireless 802.11 b/g 10/100 RJ45 Ethernet
Power Supply	External adapter included 120 VAC (1-01 models) USA 100 – 240 VAC (2-01 models) Universal with regional connectors
Power Input	9 – 30 VDC (2.5 W maximum) DC input
Dimensions	Height: 2.3 cm (0.9 in) Width: 7.3 cm (2.87 in) Depth: 9.5 cm (3.74 in)
Weight	0.28 kg (0.62 lbs)
Temperature	Operating temperature range: -40°C to 70°C (-40°F to 158°F). Storage temperature range: -40°C to 85°C (140°F to 185°F)
Relative Humidity	Operating: 10% to 90% non-condensing, 40% to 60% recommended Storage: 10% to 90% non-condensing

B: Compliance

Compliance Information

Manufacturer's Name & Address:

Lantronix 15353 Barranca Parkway, Irvine, CA 92618 USA

Declares that the following product:

Product Name: WiSpan Ethernet Bridge **Model:** WiSpan

Conforms to the following standards or other normative documents:

Safety:

UL 60950-1

CAN/CSA-C22.2 No. 60950-1-03

EN 60950-1:2001, Low Voltage Directive (73/23/EEC)

EMC & Radio:

The WiSpan contains the WiPort b/g module, which has FCC modular approval. Please reference grant number R68WIPORTG.

CFR Title 47 FCC Part 15, Subpart B and C, Class B

Industry Canada ICES-003 Issue 4 (2004), Class B

Industry Canada RSS-Gen Issue 1 (2005)

Industry Canada RSS-210 Issue 6 (2005)

EN 301 489-1 v1.4.1 (2002-08), EMC Directive (1999/5/EC)

EN 301 489-17 v.1.2.1 (2002-08), EMC Directive (1999/5/EC)

EN 300 328 v1.4.1 (2003-04), R&TTE Directive (1999/5/EC)

Australia / New Zealand AS/NZS CISPR 22 (2006), Class B

AS/NZS 4771 (2000 + A1:2003) (radio)

Japan VCCI (EMC emissions) V-3/2006-04

EN55022: 1998 + A1: 2000 + A2: 2003

EN55024: 1998 + A1: 2001 + A2: 2003

EN61000-3-2: 2000 + A2: 2005

EN61000-3-3: 1995 + A1: 2001

Manufacturer's Contact:

Director of Quality Assurance, Lantronix
15353 Barranca Parkway, Irvine, CA 92618 USA

Tel: 949-453-3990

Fax: 949-453-3995

Regulatory Information

USA Federal Communications Commission (FCC) Notice

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

This device may not cause harmful interference, and

This device must accept any interference received, including interference that may cause undesired operation.

Caution: *Changes or modifications to this product not expressly approved by Lantronix could void the user's authority to operate this equipment.*

Note: *This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.*

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- ◆ Reorient or relocate the receiving antenna.
- ◆ Increase the separation between the equipment and receiver.
- ◆ Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- ◆ Consult the dealer or an experienced radio/TV technician for help.

Caution: *Exposure to Radio Frequency Radiation*

*The equipment contains transmitter with FCC ID: **R68WIPORTG**.*

The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. Installers and end-users must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

Canada – Industry Canada Notice

This device complies with Industry Canada RSS-210 regulations (**IC: 3867A-WIPORTG**). Operation is subject to the following two conditions:

- ◆ This device may not cause interference, and
- ◆ This device must accept any interference, including interference that may cause undesired operation of the device.

To prevent radio interference to the licensed service, this device must be operated indoors only and should be kept away from windows to provide maximum shielding.

This Class B digital apparatus complies with Canadian ICES-003." Cet appareil numérique de la classe B est conforme à la norme NMB- 003 du Canada.

Antenna Notice:

This device has been designed to operate with an antenna having a maximum gain of 3 dBi. Antenna having a higher gain is strictly prohibited per regulations of Industry Canada. The required antenna impedance is 50 ohms.

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (EIRP) is not more than that required for successful communication.

Exposure of Humans to RF Fields

The installer of this radio equipment must ensure that the antenna is located or pointed such that it does not emit RF field in excess of Health Canada limits for the general population; consult Safety Code 6, obtainable from Health Canada's website: www.hc-sc.gc.ca/rpb

Europe – R&TTE Directive 99/5/EC, Wireless Notice

This product is designated as a Class 2 type radio device that utilizes non-harmonized frequencies and power levels for Europe. It is marked with the following warning symbol to bring to your attention to the fact it might not be legal to use this product in every country. In most cases this product has already been granted permission for use from individual countries in Europe. If you are unsure, please contact the communications authority for the country to be operated in.



In addition to this notice, the following countries in Europe have certain restrictions on the operation of 2.4 GHz WLAN type devices:

Country	Restriction
France	Outdoor use is limited to 10mW E.I.R.P within the frequency band 2454-2483.5 MHz.
Italy	If used outside of own premises, general authorization is required
Luxembourg	General authorization required for public service.
Romania	Individual license is required.

Australia & New Zealand – Wireless Notice

This product has been found to be compliant with the wireless regulatory requirements for Australia and New Zealand and is designated to have met Compliance Level 2.

The compliance mark is designated with the circle and check mark inside is called the “C-Tick” mark. This C-Tick mark label is located underneath this product and signifies its compliance, as shown below:



ACN 095 223 484

The number “ ACN 095 223 484 “ stands for Australian Company Number and the 9 digit number designates the local representative in Australia who can take inquiries regarding this product’s compliance status. The following contact address is found below:

Lantronix Australia Pty. Ltd.
c/o LLK Chartered Accountants
Suite 2, Level 7
122 Walker Street
North Sydney, NSW 2060
Australia

C: Warranty

Lantronix warrants each Lantronix product to be free from defects in material and workmanship for a period of TWO YEARS. During this period, if a customer is unable to resolve a product problem with Lantronix Technical Support, a Return Material Authorization (RMA) will be issued. Following receipt of a RMA number, the customer shall return the product to Lantronix, freight prepaid. Upon verification of warranty, Lantronix will -- at its option -- repair or replace the product and return it to the customer freight prepaid. If the product is not under warranty, the customer may have Lantronix repair the unit on a fee basis or return it. No services are handled at the customer's site under this warranty. This warranty is voided if the customer uses the product in an unauthorized or improper way, or in an environment for which it was not designed.

Lantronix warrants the media containing its software product to be free from defects and warrants that the software will operate substantially according to Lantronix specifications for a period of 60 DAYS after the date of shipment. The customer will ship defective media to Lantronix. Lantronix will ship the replacement media to the customer.

In no event will Lantronix be responsible to the user in contract, in tort (including negligence), strict liability or otherwise for any special, indirect, incidental or consequential damage or loss of equipment, plant or power system, cost of capital, loss of profits or revenues, cost of replacement power, additional expenses in the use of existing software, hardware, equipment or facilities, or claims against the user by its employees or customers resulting from the use of the information, recommendations, descriptions and safety notations supplied by Lantronix. Lantronix liability is limited (at its election) to:

- ◆ Refund of buyer's purchase price for such affected products (without interest).
- ◆ Repair or replacement of such products, provided that the buyer follows the above procedures.

There are no understandings, agreements, representations or warranties, expressed or implied, including warranties of merchantability or fitness for a particular purpose, other than those specifically set out above or by any existing contract between the parties. Any such contract states the entire obligation of Lantronix. The contents of this document shall not become part of or modify any prior or existing agreement, commitment or relationship.

For details on the Lantronix warranty replacement policy, go to our web site at www.lantronix.com/support/warranty